

### February 23, 2022 California Public Utilities Commission Briefing



*Erik Brookhouse, VP System Operations Matt McVee, VP Regulatory Policy and Operations* 



## PacifiCorp's California Service Territory



### **General Stats**

PacifiCorp provides electricity to approximately **45,000 customers** via

63 substations,

**2,520 miles** of distribution lines,

and about **800 miles** of transmission lines across nearly **11,000 square miles of which just under half is classified as HFTD** 



**850 miles** of overhead distribution lines in the HFTD;

**350 miles** of transmission lines in the HFTD

## Public Safety Power Shutoff Overview

PacifiCorp's plan for proactive deenergization is currently limited to Tier 3 areas

Breaking the two main areas into five PSPS Areas was done to minimize customer impact where appropriate, based on weather monitoring capability and circuit topology.



	PSPS Area	Substation	# of Circuits	Customers	Distribution OH	Distributior UG
1	Нарру Сатр	Seiad, Happy Camp	3	865	48.4	5.9
2	Weed	Weed, International Paper	5	2,589	90.5	62.1
3	Mt. Shasta	Mt. Shasta	6	5,074	86.4	76.7
4	Dunsmuir	N & S Dunsmuir, Nutglade	5	1,806	30.0	8.6
5	Snowbrush	Snowbrush	1	17	4.2	1.2
	Total	9 Substations	20	10,351	259.5	154.5

## **PSPS** Decision Making Framework

- PacifiCorp uses a range on inputs in its assessment and decision-making process:
  - $\checkmark$  Weather Forecasting & Risk
  - ✓ Localized System Impact Assessment
  - ✓ Real Time Local Conditions
  - ✓ Dynamic Input from Local Partners



- The following metrics are used as part of the inputs in decision making:
  - Hourly Fosberg Fire Weather Index (FFWI) combines temperature, relative humidity, and 10-minute windspeed factored into a single weather index correlated to influence on fire spread
  - **The Keetch-Byram Drought Index (KBDI)** assesses the risk of fire by representing the net effect of evapotranspiration and precipitation in producing cumulative moisture deficiency.
  - Localized Vapor Pressure Deficit (VPD) measures the department from normal dryness in a shorter term to complement KBDI
  - $\odot$  Forecasted wind speeds and potential sustained gusts.

### 2020 v. 2021 PSPS Performance and Execution

	2020	2021
De-energization Events	1	1
Total Hours De-energized	7.9	9.6
Customers Affected	2,559	1,953
AFN other than Medical Baseline Customers Affected		7
Medical Baseline Customers Affected	5	4
Critical Facilities Affected	13	19
Circuits De-energized	2	6
Community Resource Centers Activated	0	1
Hazards Identified Post-event	0	0

- 2020 and 2021 had similar PSPS performance and execution metrics
- Improvements based on 2020 lessons learned were executed in 2021 creating better data capture, streamlined response and increased outreach during events



## PSPS is Used as a Measure of Last Resort

Protocols ensure PSPS is a measure of last resort to minimize frequency and impact

- Customers notified based on forecasts
- De-energized on real time conditions
- Circuit segmentation created for Tier 3 circuits
- Pre-event review of current system conditions and vegetation work plans

### Additional pre-event actions include:

- Engagement of critical customers
- Engagement with local emergency responders

Date	Location	Total Customers Notified	Total Customers De-energized	Medical + AFN Customers De-energized	Counties De- energized	Tribes De- energized
8/17/2021	Dunsmuir	1,953	1,953	11	1	0

### August 17, 2021 Event

- Duration 9 hours & 36 minutes (3:41 p.m. until 1:17 a.m.)
- Field inspections and patrols instituted in the affected area, recording wind observations, submitting weather observations, videos, and pictures of the current conditions
- Final inspection of the de-energized circuits performed in sections prior to re-energization
- The company did not identify any equipment that was damaged during the August 17 event
- Event affected six distribution circuits (5G69, 7G71, 7G73, 7G75, 8G65, 8G95)

## Weather Forecasting & Fire Science Technologies in 2021

- PacifiCorp made significant investments in meteorology and fire science technologies in 2021 which included hiring full-time meteorologists and implementing high-performance computing, numerical weather prediction, and wildfire consequence modeling.
  - Localized Risk Assessment Model (LRAM) An operational LRAM Outage Model was implemented in 2021 and has had demonstrated success in predicting wind-related power outages for both small and large wind events.
  - PacifiCorp Weather Research & Forecast (WRF) model PacifiCorp recently implemented a custom WRF that provides twice-daily hourly weather and fuels forecast data at 2km resolution across a 96-hour time horizon. Although not yet implemented at the time of the Dunsmuir PSPS, PacifiCorp's WRF has since demonstrated skill at forecasting localized, high-impact wind events and fuels conditions that contribute to extreme fire behavior.
  - **Technosylva's Wildfire Analyst-Enterprise (WFA-E)** PacifiCorp piloted WFA-E during the 2021 fire season. WFA-E uses meteorological and environmental forecast data to map out wildfire potential, behavior and consequence across the landscape. Although WFA-E had not yet been implemented at the time of the Dunsmuir PSPS, it has demonstrated success in both identifying high risk situations and modeling actual wildfires.
- 2021 PSPS challenges were mostly related to forecast model and observational limitations
  - The above solutions were in development during the 2021 fire season and not fully implemented until late 2021.
  - NOAA's HRRR data which feeds LRAM is only available at 3km resolution and across a 48-hour forecast horizon.
  - Weather station coverage was limited in some areas.
- PacifiCorp's Meteorology team actively engaged the meteorology teams at SDG&E, SCE, and PG&E in 2021 to discuss best practices, current technologies, and lessons learned.



## Weather Forecasting & Fire Science Technologies – Improvements Coming in 2022

- PacifiCorp is working to complete a high-resolution, 30-year WRF reanalysis of hourly weather and fuels conditions across its entire service territory (much of the Western U.S.)
  - Create a detailed climatology of weather, fuels, and fire weather indices at the asset level.
  - Correlate weather extremes with system events (outages, damages, etc.) as well as fire occurrence to create an impactsbased forecasting system.
- LRAM Outage Model forecast horizon to be extended from 48 hours to 96 hours and will expand to include all weather-related hazards at the zone of protection level for each circuit.
  - Additional lead time accomplished by replacing the current weather model (NOAA's HRRR) with PacifiCorp's new WRF.
  - Machine learning techniques to leverage the upcoming 30-year WRF reanalysis to improve the outage model.
  - Translates the fuels and fire weather forecasts into percentiles to better understand how "extreme" an event may be.
- Technosylva's Wildfire Analyst-Enterprise coverage to expand in coverage and leverage PacifiCorp's WRF and 30-year reanalysis to better forecast fire risk and consequence.
  - Development of new products to better identify risks associated with large summertime wildfires.
  - Development of a Fire Potential Index utilizing the technology behind WFA-E.
- Weather station network expansion to include 47 new stations in CA (bringing the total to 80).

## Public Safety Power Shutoff Improvements

PacifiCorp is committed to further improve its predicative weather and PSPS forecasting capability

## 2019

#### **Initial capability**

- Identification and siting of initial weather stations
- Development of initial fire indices
- High level risk and fire modeling complete

## 2020

### Improved forecasting

- Expansion of weather station network to 21 locations
- Leveraged outside meteorology expertise
- Improved risk modeling began leveraging data science to formulate conclusions

## 2021

#### Material advancement in predicative weather capability

- Chief Meteorologist hired February 2021 with extensive utility experience in establishing predictive weather capability focused on wildfire mitigation and PSPS
- Additional in-house
  meteorologist before fire season
- Initial scoping complete and estimates received for high performance computing cluster

## 2022

#### **Continuous improvement**

- In house and fully operational Weather Research & Forecast (WRF) model before fire season
- Operational high performance computing cluster for implementation of Machine Learning and impacts-based forecast.
- Continued refinement of fire potential indices
- Improved weather forecasting at station, district and zone of protection level
- Continued strategic growth of Mesonet program

## **External Agency Coordination & Engagement**

### **Communications Providers**

Outreach to support preparedness:

- 8 communications providers / 4 located in PSPS Zones
- Initial outreach conducted to establish primary & secondary contacts:
  - ✓ Primary 100% ✓ Secondary 50%
- Outreach continuing to improve preparedness and coordination

### Engagement with Tribal Communities

Working to enhance coordination:

- ✓ Holding twice monthly meetings
- ✓ Established engagement with the Karuk Tribe newly hired emergency manager
- ✓ Continuing to coordinate and provide information to tribal communities
- ✓ Establishing set meetings in the future

### Engagement with Public Safety Partners

Working to enhance coordination:

- ✓ Collaborate formally through 2 Annual Tabletop and Functional Exercises
- Engage and maintain local situational awareness through applicable county emergency manager(s)

### Feedback from External Agencies and Public Safety Partners

### Aspects Working Well

- ✓ Joint Information System coordination has been established and will continue to be a valuable partnership
- ✓ State, County, local and private emergency management plans are aligned and function well together
- Partnerships established between state, county, local and private agencies to support coordination with access and functional needs populations

### Areas to Watch

- Continued work through established partnerships is needed to improve coordination with Access and Functional Needs population
- Additional public outreach to customers regarding wildfire risk and mitigation strategies is needed
- Communications providers have limited bandwidth for some areas requiring secondary and tertiary contingency plans

## **PSPS Community Support Programs**

### **Free Portable Battery Program**

PacifiCorp implemented a program to provide back-up batteries - at no cost - to medical baseline customers who depend on medical equipment powered by electricity. The contracted service provides a battery to the customer along with education and training for longer term operation of the batteries which are wholly owned and operated by the customer.

- Batteries were delivered to 28 registered medical baseline customers within PSPS areas in December of 2021.
- The program expanded in 2022 to include remaining areas in the California service territory with a goal to deliver an additional 50 batteries by May of 2022.



### California Generator Rebate Program

PacifiCorp is offering eligible California customers a rebate on the purchase of a portable generator or portable power station to help prepare for potential power outages.



### **Program Eligibility:**

- Reside in Tier 2 or Tier 3 high-fire threat areas on the California High Fire Threat District map.
- The purchased product must be on the qualified product list.
- The applicant must have an active Pacific Power account number as either a customer or tenant of a Pacific Power customer.

## **Public Education & Outreach**

### **Customer Survey Conducted Quarter 4, 2021**

Survey Participation 579 Total Surveys Completed
 74 Phone Based Surveys
 505 Web Based Surveys

Key Findings

- ✓ 61% are aware of wildfire safety communications, which is in line with prior surveys.
- ✓ Pacific Power remains the primary source for wildfire preparedness information.
- Respondents rated the Pacific Power website as the most useful and clear source of information.



- ✓ 73% have taken action to prevent wildfires or to prepare their home or business for the event of a wildfire.
- ✓ 16% experienced PSPS event in 2021, over three quarters (81%) say they received adequate notification and information to prepare for an event.

### Recommendations

- ✓ Continue educating customers about Pacific Power's efforts to reduce the risk of wildfire.
- ✓ The increase in awareness compared to August 2021 suggests that messaging has been effective or more frequent during the peak of the fire season.
- Continue utilizing TV news, social networking, and email to communicate with customers about wildfire preparedness and safety.
- ✓ Evaluate strategy used to inform customers of a PSPS map on the Pacific Power website and how they can update their contact information with Pacific Power to receive notifications.

### **PSPS Mapping & Transparency**

Working to update and enhance website material, including real time PSPS status updates



### POWERING YOUR GREATNESS

### **AFN & Medical Baseline Customers**

#### Access and Functional Needs Plan for 2022

- Collaborate with State and Community Based Organizations (CBOs) to leverage the common definition and identify targeted outreach opportunities.
- Continue to deploy and expand strategies to enhance identification of individuals with AFN:
- Partner with state agencies, hospital associations, healthcare providers, and CBOs to identify targeted audiences
- Marketing to promote beneficial programs like Medical Baseline and CARE to reach AFN individuals
- ✓ AFN Marketing and outreach to encourage customers to selfidentify as individuals with AFN
- ✓ Continue to promote the ability for customers to "selfcertify/identify" as individuals with AFN/Vulnerable Customer status across new channels including websites

PSPS De-Energization Zone	Medical Baseline AFN	Non-Medical Baseline AFN	Total
Inside	26	97	123
Outside	77	267	344
Total	103	364	467

#### Resources

Community Resource Centers	Wi-Fi, ADA-accessible restroom, bottled water, snacks, charging, chairs, ice, event information & area/weather items	~
Power Resiliency	Portable backup batteries for Medical Baseline customers	~
	Generator Rebate Program	✓
	Annual Preparedness Outreach	✓
· · · · · · · · · · · · · · · · · · ·	In Language Materials	✓
Customer Communications	Accessible Materials	~
	CBO Partners	~
	General Information	~
Training	Tabletop exercises and full-scale exercises	~
Community Engagement IOU hosted events, Webinars, Advisory Boards, Working Groups		~
	Account Holders	~
PSPS Notifications	Non-Account Holders	~
	Broad: via multicultural media, CBOs, and social media	~
	Life Support/Critical Care	✓
Notification Confirmation (Phone	Medical Baseline	<b>~</b>
retries & in person doorbell rings)	Self-Certified Vulnerable Customer Status	~

AFN customers are Individuals who are at an increased risk of harm to their health and safety during a Public Safety Power Shutoff. Including, but not limited to:

- Medical & Non-Medical,
- Behavioral, Mental & Emotional Health,
- Mobility & Movement,
- Communication, and

Individuals who require devices for health, safety and independence.

## **Opportunities Identified in 2021**

- Communication companies have bandwidth limitations such that PacifiCorp's customer notifications need to be staggered to not overload the communication system
- The need to coordinate directly with telecommunication emergency management teams during PSPS events
- Additional coordination and collaboration with tribal leaders
- The need to effectively coordinate with Community and Religious Based Organizations would allow better outreach to AFN population prior to, during and recovering from a PSPS event
- Ensuring Joint Information System has timely and accurate information to ensure all cooperating agencies have appropriate messaging
- CRC activation was the first for PacifiCorp and while it was effective some logistical and communication adjustments have been made for future deployments
- Real time production of GIS mapping data was more challenging to produce and distribute than anticipated
- The need for customer communication verification



## Looking Forward to 2022

- Leveraging full capabilities of the internal meteorological team established in 2021 and new forecast modeling tools currently being implemented for the 2022 fire season
- Improved coordination with key stakeholders such as telecommunications providers, tribal leaders, critical infrastructure customers and public safety partners with expanded emergency management organization
- Expanded PSPS exercise frequency to ensure all involved understand their role and responsibilities during an actual event
- Continued participation in coordination meetings with other IOUs
- Implementation of revised and improved customer communication strategies
- Improved Community and Religious Based Organization outreach to enhance support for AFN community

### **Continuous Improvement**

# Thank you

